CLAIMS

What is claimed is:

1. A composite ring for coupling a disk to a spindle, comprising:

a upper layer constructed of a material having a Young's modulus greater than or equal to a primary material of the disk; and

a lower layer fixedly coupled to the upper layer and constructed of a material having similar properties to that of the disk, the properties being selected from a group consisting of a coefficient of thermal expansion, thermal conductivity and Young's modulus.

2. A composite ring as recited in claim 1, wherein the upper layer has a Young's modulus between about 20 to about 250 GPa .

3. A composite ring as recited in claim 1, wherein the upper layer has a Young's modulus of between about 60 to about 300 GPa.

4. A composite ring as recited in claim 1, wherein the upper layer is constructed of a material selected from a group consisting of chrome, titanium, nickel, stainless steel and composites thereof.

5. A composite ring as recited in claim 1, wherein the lower layer has a thermal expansion of between about 1 and 25 (10^{-6}/C) .

6. A composite ring as recited in claim 1, wherein the lower layer is constructed of a material selected from a group consisting of aluminum and glass.

7. A composite ring as recited in claim 1, further comprising a middle layer fixedly coupled between the upper and lower layers.

8. A composite ring as recited in claim 1, wherein the layers are coupled together via mechanical bonding.

9. A composite ring as recited in claim 1, wherein the layers are coupled together by an adhesive.

10. A composite ring as recited in claim 1, wherein the layers are coupled together at a molecular level.

11. A composite ring as recited in claim 1, wherein a ratio of a modulus of the upper layer to a modulus of the lower layer is between about 1 and 5.

12. A composite ring for coupling a disk to a spindle, comprising:

a upper layer constructed of a material having a Young's modulus greater than or equal to a primary material of the disk; and

a lower layer fixedly coupled to the upper layer and constructed of a material having similar properties to that of the disk, the properties being selected from a group consisting of a coefficient of thermal expansion wherein the upper layer has a hardness of greater than about 20 kg/mm^2;

wherein the upper layer has a modulus of greater than about 60 GPa.

13. A composite ring as recited in claim 12, wherein the upper layer is constructed of a material selected from a group consisting of chrome, titanium, nickel, stainless steel and composites thereof.

14. A composite ring as recited in claim 12, wherein the lower layer has a thermal expansion between about 1 and 25 (10^{-6}/C) .

15. A composite ring as recited in claim 12, wherein the lower layer is constructed of a material selected from a group consisting of aluminum and glass.

16. A composite ring as recited in claim 12, further comprising a middle layer fixedly coupled between the upper and lower layers.

17. A composite ring as recited in claim 12, wherein the layers are coupled together via mechanical bonding.

18. A composite ring as recited in claim 12, wherein the layers are coupled together by an adhesive.

19. A composite ring as recited in claim 12, wherein the layers are coupled together at a molecular level.

20. A composite ring as recited in claim 12, wherein a ratio of a modulus of the upper layer to a modulus of the lower layer is between about 1 and 5.

21. A composite ring for coupling a disk to a spindle, comprising:

a upper layer; and

a lower layer fixedly coupled to the upper layer and constructed of a material having similar properties to that of the disk, the properties being selected from a group consisting of a coefficient of thermal expansion and thermal conductivity;

wherein the upper layer has a Young's modulus greater than that of a primary material of the disk;

wherein a ratio of the modulus of the upper layer to a modulus of the lower layer is between about 1 and 5.

22. A composite ring as recited in claim 21, wherein the lower layer has a thermal expansion between about 1 and 25 (10^{-6}/C) .

23. A composite ring as recited in claim 21, wherein the lower layer is constructed of a material selected from a group consisting of aluminum and glass.

24. A composite ring as recited in claim 21, further comprising a middle layer fixedly coupled between the upper and lower layers.

25. A magnetic storage system, comprising:

magnetic media coupled to a spindle using the composite ring of claim 1;

at least one head for reading from and writing to the magnetic media, each head having:

a sensor;

a write element coupled to the sensor;

a slider for supporting the head; and

a control unit coupled to the head for controlling operation of the head.